

ADC120 All-in-One

120WATT Portable Inverter



User's Manual

IMPORTANT SAFETY INFORMATION, SAVE THESE INSTRUCTIONS

TO REDUCE THIS RISK OF INJURY, USER MUST READ AND UNDERSTAND THIS INSTRUCTIONAL MANUAL. THIS MANUAL CONTAINS IMPORTANT INFORMATION REGARDING THE OPERATION AND WARRANTY OF THIS PRODUCT. PLEASE RETAIN FOR FUTURE REFERENCE.

IMPORTANT SAFETY INSTRUCTIONS

— WARNINGS

TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK, EXPLOSION OR INJURY:

- Do not connect to AC distribution wiring.
- Remove appliance plug from outlet strip or turn off inverter before working on the appliance. Multiple outlet power strips with switches and circuit breakers only interrupt power to the "hot" receptacle terminals. The "neutral" terminals remain powered with respect to the "ground" terminals.
- Not approved for ignition protected areas. Do not make any electrical connections or disconnections in areas designated as IGNITION PROTECTED. This includes DC cigarette lighter type plug connection or airplane adapter.
- Do not operate the inverter near flammable materials, fumes or gases.
- Provide adequate ventilation and refrain from placing items on or around the inverter during operation.
- Proper cooling is essential when operating the inverter. Do not place the unit near the vehicle's heat vent or in water or in direct sunlight.
- NEVER immerse the unit in water or any other liquid, or use when wet.
- DO NOT insert foreign objects into the AC outlet or the USB outlet.
- DO NOT attempt to connect or set up the unit or its components while operating your vehicle. Inattention to the road may result in a serious accident.

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- This is not a toy-keep away from children.
- INSTALL AND OPERATE UNIT ONLY AS DESCRIBED IN THIS USER'S MANUAL.

! CAUTIONS

1. Always use the inverter where there is adequate ventilation. Do not block ventilation slots.
2. ALWAYS turn the inverter OFF by disconnecting it from the DC accessory outlet when not in use.
3. This inverter will not operate high wattage appliances or equipment that produce heat, such as hair dryers, microwave ovens and toasters.
4. This inverter is not tested for use with medical devices.
5. Do not open either the inverter or the detachable FM Transmitter-there is no user-serviceable parts inside.
6. When using this unit in a vehicle, check the vehicle owner's manual for maximum power rating and recommended output. It may be necessary to change the vehicle accessory outlet's in-line fuse to a higher rating. Do not install in engine compartment-install in a well ventilated area.
7. Do not use with positive ground electrical system*. Reverse polarity connection will result in a blown fuse and may cause permanent damage to the inverter and will void warranty.

* The majority of modern automobiles, RVs, trucks, and boats are negative ground.

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INTRODUCTION

Thank you for purchasing the **All-in-one mobile power inverter**. This inverter can be used to operate personal electronics and mobile office equipment. It can also be used to recharge 110/120-Volt AC devices that have an appropriate recharging adapter with a standard North American two or three-prong plug. Please read this user's Manual carefully before use to ensure optimum performance and to avoid damage to this Product.

FEATURES

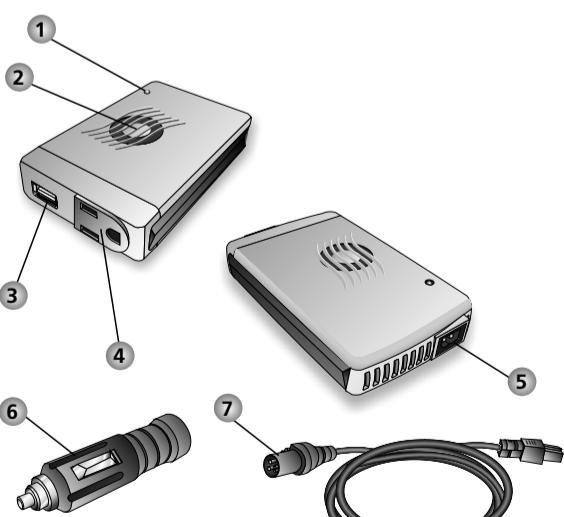
- 120 watts output*
- Electronic circuit protection prevents damage due to overload/insufficient ventilation (overheat condition)
- Low-battery protection- unit automatically shuts down when battery discharges below 10.5+-0.5 volts.
- Automotive and airplane 12-Volt DC adapters
- 5-Volt DC USB power port
- Bi-color Power/Fault LED
- Compact size, efficient and quiet
- Convenient carrying bag



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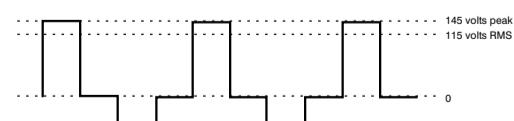
1. BI-COLOR POWER/FAULT LED
2. HIGH SPEED COOLING FAN
3. USB POWER PORT
4. STANDARD NORTH AMERICAN 110/120-VOLT AC OUTLET
5. 12-VOLT DC ADAPTER INPUT TERMINAL
6. 12-VOLT DC VEHICLE ACCESSORY ADAPTER
7. EM 12-VOLT DC AIRPLANE CORD

HOW THIS INVERTER WORKS

This inverter is an electronic device that converts low voltage DC (direct current) electricity from a battery to 110/120 Volt AC (alternating current) household power. In designing this inverter, we have incorporated design techniques previously employed in computer power supplies. This result of these design innovations is a smaller, lighter and easier-to-use power inverter. The **All-in-one mobile power inverter** converts power in two stages. The first stage is a DC-to-DC conversion process that raises the low voltage DC at the inverter input to 145 volts DC. The second is a MOSFET bridge stage that converts the high voltage DC into 110/120 volts, 60 Hz AC.

All-in-one mobile power inverter Output Waveform

This AC output waveform of this inverter is known as a modified sine wave. It is a stepped waveform that has characteristics similar to the sine wave shape of utility power. This type of waveform is suitable for most AC loads, including linear and switching power supplies used in electronic equipment, transformers, and small motors.



The modified sine wave produced by your inverter

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The modified sine wave produced by this inverter has an RMS (root mean square) voltage of 110/120 volts. Most AC voltmeters (both digital and analog) are sensitive to the average value of the waveform rather than the RMS value. They are calibrated for RMS voltage under the assumption that the waveform measured will be a pure sine wave. Non-TRUE RMS meters will read about 20 to 30 volts low when measuring the output of this inverter. For accurate measurement of the output voltage of this unit, use a TRUE RMS reading voltmeter such as a Fluke 87, Fluke 8080A, Beckman 4410 or Triplett 4200.

! CAUTIONS

Rechargeable Devices

- Certain rechargeable devices are designed to be charged by plugging them directly into an AC receptacle. These devices may damage the inverter or the charging circuit.
- When using a rechargeable device, monitor its temperature for the initial ten minutes of use to determine if it produces excessive heat.
- If excessive heat is produced, this indicates the device should not be used with this inverter.
- This problem does not occur with most of the battery-operated equipment. Most of these devices use a separate charger or transformer that is plugged into an AC receptacle.
- The inverter is capable of running most chargers and transformers.

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OPERATING INSTRUCTIONS

Once the vehicle accessory adapter is properly connected to a 12-Volt DC power source, the bi-color LED indicator lights GREEN when the inverter is connected to DC power and the unit power is ON. (If the bi-color LED indicator lights RED, refer to the "Troubleshooting" section on page 12 of this manual.)

ALWAYS TURN THE INVERTER ON BEFORE APPLYING POWER TO THE DEVICE.

The standard North American 110/120 volt AC and USB outlets allow the user to operate multiple devices simultaneously. Simply plug the equipment into the unit.

Note: Ensure wattage of all equipment simultaneously plugged into the power inverter does not exceed 120-watts continuous.

Rated Versus Actual Current Draw of Equipment

Most electrical tools, appliances, electronic devices and audio/visual equipment have labels that indicate the power consumption in amps or watts. Be sure the power consumption of the item to be operated is below 120-watts. If the power consumption is rated in amps AC, simply multiply by the AC volts (110/120) to determine the power. Resistive loads are the easiest for the inverter to run; however, it will not operate larger resistive loads (such as electric stoves and heaters), which require far more wattage than the inverter can deliver. Inductive loads (such as TVs and stereos) require more current to operate than do resistive loads of the same wattage rating.

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- Overload/Short Circuit Protection**-The inverter will automatically shut down if a short circuit occurs.
- AC Ground Leakage**-The inverter will automatically shut down when leakage current exceeds a preset safety level.

Operating Tips

The **All-in-one mobile power inverter** should only be operated in locations that are:

- DRY**-Do not allow water or other liquids to come into contact with the inverter.
- COOL**-Surrounding air temperature should ideally be 0-40°C (32-104°F). Keep the inverter away from direct sunlight, when possible.
- WELL-VENTILATED**-Keep the area surrounding the inverter clear to ensure free air circulation around the unit. Do not place items on or over the inverter during operation. The unit will shut down if the internal temperature gets too hot.
- SAFE**-Do not use the inverter near flammable materials or in any locations that may accumulate flammable fumes or gases. This is an electrical appliance that can briefly spark when electrical connections are made or broken.

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For safety reasons, the inverter will simply shut down if it is overloaded. To restart the unit, simply reinsert the 12-Volt vehicle accessory adapter to reset.

Operation of the 110/120 Volt AC Outlet

- Connect the Power Cord to the inverter.
- Connect either the 12-Volt DC Vehicle Accessory Adapter or the 12-Volt DC Airplane Adapter to the end of the 12-Volt Power Cord.
- Insert the selected adapter Plug into a vehicle's (or other 12-Volt DC power source's) DC accessory outlet or airplane DC power outlet.
- Rotate the vehicle accessory plug slightly to make sure there is good contact.
- The LED in the inverter will light GREEN, indicating a proper connection.
- If the inverter does not work, make sure the ignition/ accessory switch is actually powering the accessory outlet. Some vehicles require the ignition switch to be turned on.
- Plug the (110/120 Volt AC) appliance into the inverter's two or three-prong AC outlet and operate normally.

Note: The inverter will not operate appliances and equipment that generate heat, such as hair dryers, electric blankets, microwave ovens and toasters.

Operation of the USB Power Port

- Connect the Power Cord to the inverter.
- Connect either the 12-Volt DC Vehicle Accessory Adapter or 12-Volt DC Airplane Adapter to the end of the 12-Volt Power Cord.

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- Insert the selected adapter plug into a vehicle's (or jump-starter's) DC accessory outlet or airplane DC power outlet.
- Rotate the plug slightly to make sure there is good contact.
- The LED will light GREEN, indicating a proper connection.
- If the inverter does not work, make sure the ignition/ accessory switch is actually powering the accessory outlet. Some vehicles require the ignition switch to be turned on.
- Plug the USB-powered device into the inverter's USB Power Port and operate normally.

Notes: This inverter's USB Power Port does not support data communication. It only provides 5 volts/500mA DC power to an external USB-powered device. The USB power output is not controlled by the ON/OFF Power. The USB power is always on when the Power Cord is connected to a 12-Volt DC power source. Remember to disconnect the Power Cord from any power source when the unit is not in use.

Protective Features

The inverter monitors the following conditions:

- Low Battery Voltage**-This condition is harmful to the inverter, and could damage the power source, so the inverter will automatically shut down when input voltage drops below 10.5 Volts DC.
- Input Voltage Too High**-The inverter will automatically shut down when DC input voltage exceeds 15 Volts, as this can harm the unit.
- Thermal Shutdown Protection**-The inverter will automatically shut down when the unit becomes overheated.

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Common Power Output Problems

Possible Causes	Recommendations
Battery voltage below 10.5 volts	Recharge battery or check DC power supply.
Equipment being operated draws too much power	Reduce load to maximum 120 watts.
Inverter in thermal shutdown condition	Allow inverter to cool down. Ensure there is adequate ventilation around the unit, and the load is no more than 120 watts for continuous operation.
AC output is shorted	Disconnect the AC appliance. Pull out the DC Power Cord from your vehicle's DC output. Wait a few seconds and then re-insert the DC Power Cord to turn it back ON.

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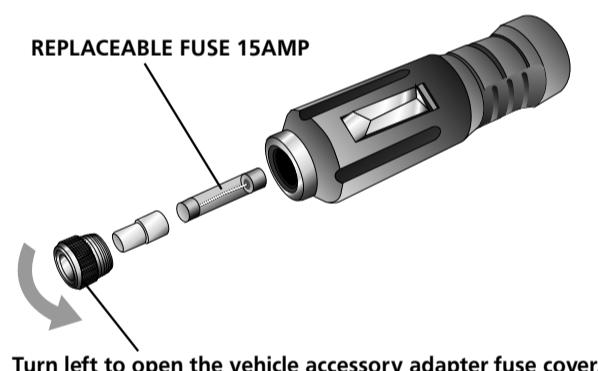
CARE AND MAINTENANCE

Storage

- Ideal storage temperature range is 0-40°C (32-104°F).
- Store and use the **All-in-one mobile power inverter** in a cool, dry place with adequate ventilation for all-around air circulation.
- Avoid locations that are exposed to heating units, radiators, direct sunlight, or excessive humidity or dampness.

Fuse Replacement (in 12-Volt DC Power Cord)

- Disconnect unit from 12-Volt DC power source.
- Remove fuse cover from DC power wire cord. Remove the fuse.
- Replace with a new fuse (15 amp, glass type). Refer to the illustration below.



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SPECIFICATIONS

Maximum Continuous Power.....	120 Watts
Maximum Surge Capability (Peak Power).....	240 Watts
No Load Current Draw.....	<0.3A
Waveform.....	Modified Sine Wave
Operating Input Voltage Range.....	11-15 Volts DC
AC Receptacle.....	110V/120V AC (3 prong grounded)
Approximate Dimensions.....	110L x 66W x 22 H/mm 4.33L x 2.5W x .8H/inch
Approximate Weight.....	123.2g 27lb

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